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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,782	10/27/2003	Martin John Guy	PAT2594A-2US	1025
42534 7590 05/02/2007 BORDEN LADNER GERVAIS LLP 1100-100 QUEEN ST OTTAWA, ON K1P 1J9 CANADA			EXAMINER SEDIGHIAN, REZA	
			ART UNIT 2613	PAPER NUMBER
			MAIL DATE 05/02/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/692,782

Applicant(s)

GUY, MARTIN JOHN

Examiner

M. R. Sedighian

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/27/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2613

1. This communication is responsive to applicant's 2/27/07 remarks. Claims 1-14 are now pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee et al. (US Patent No: 6,650,842 B1) in view of Berger et al. (US Patent No: 6,021,245).

Regarding claims 1, 13, and 14, Fee discloses a multichannel (DS1, DS2, DS3, DS4, fig. 7) optical wavelength division multiplexed (32, fig. 7) transmission system (30, fig. 7) for connecting between a multiplexer (32, fig. 7) and a demultiplexer (42, fig. 7), the system comprising a plurality of serial spans (the serial spans along the fiber line 34, fig. 7) extending between multiplexer and the demultiplexer, wherein a first span is arranged to be connected to the multiplexer (the first span that is connected to multiplexer 32 in fig. 7) and each span comprises a length of optical transmission fiber (the loop fiber in fig. 7), a dispersion compensation module DCM (64, fig. 7) and an optical amplifier (26, fig. 7), wherein the properties of the DCM are being selected to suppress four-wave mixing (col. 6, lines 6-15) rather than to provide complete chromatic dispersion compensation of the respective span (col. 6, lines 10-15), and wherein located immediately following a last span and connected thereto is a further DCM (the last DC module 64 that is connected to the last span, shown in fig. 7) having properties selected to substantially compensate for the chromatic dispersion over of the span (col.

Art Unit: 2613

6, lines 36-49). Fee differs from the claimed invention in that Fee does not specifically disclose the last DCM (last DC 64, fig. 7) has properties selected to substantially complete the chromatic dispersion compensation over the total length of the spans, or to completely compensate for the cumulative chromatic dispersion introduced by all the spans. Berger teaches dispersion compensation for serial spans (16, 11, 8 and 9, 14, 18, fig. 4a) in an optical transmission system, wherein a dispersion compensation fiber (18, fig. 4a) completely compensates the accumulated dispersion (col. 2, lines 62-64). As it is taught by Berger, it would have been obvious to a person of ordinary skill in the art at the time of invention that the dispersion compensation modules, such as dispersion compensation module 64 of Fee that is positioned at the last span can completely compensates the accumulated dispersion of all the spans to further provide an increase in the transmission data rate and/or to increase the transmission distance. As to claim 14, Fee discloses deliberately compensating in each span only partially for the chromatic dispersion in that span (col. 5, lines 55-66 and p1, p3, p5, fig. 8) such that four-wave mixing is reduced (col. 6, lines 9-15 and fig. 9), and providing a final compensating step at the end of the spans (col. 6, lines 35-50).

Regarding claim 2, Fee discloses optical amplifier (26, 60, fig. 7) in each serial span is of a two-stage design with the DCM (64, fig. 7) placed between them.

Regarding claim 3, Fee differs from the claimed invention in that Fee does not specifically disclose each DCM comprises a length of dispersion compensating fiber. Berger discloses lengths of dispersion compensating fiber (25, 26, 27, 28, fig. 1a) for compensating dispersion (col. 4, lines 21-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate dispersion compensating fibers such as the

ones of Berger for the dispersion compensation modules of Fee to decrease the accumulated dispersion in the region of high signal power and to reduce the non-linear effects (Berger, col. 3, lines 55-59).

Regarding claims 4-5 and 7, Berger discloses the dispersion value of the DCFs can be fixed (col. 1, lines 25-30) and the length of each DCF is selected to suppress the four-wave mixing (col. 2, lines 20-23, 42-47). Berger further teaches the DCF in each serial span is of substantially equal length (col. 2, lines 44-45).

Regarding claim 6, Fee discloses an optical amplifier (60, fig. 7) is interposed along the length of dispersion compensating fiber which serves as the further DCM (64, fig. 7).

Regarding claim 12, Fee discloses an optical post-amplifier (60, fig. 7) and an optical pre-amplifier (26, fig. 7).

4. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee et al. (US Patent No: 6,650,842 B1) in view of Berger et al. (US Patent No: 6,021,245) in further view of Auracher (US patent No: 5,392,377).

Regarding claims 8-9, the modified optical dispersion compensation system of Fee and Berger differs from the claimed invention in that Fee and Berger do not disclose there are 400-2000 channels at a spacing of 5-10 GHz. However, Fee discloses more or less data sources and carriers could be implemented as desired (col. 5, lines 15-20). Auracher discloses an optical transmission system (fig. 1) with a plurality of optical signals of closely adjacent channels (col. 6, lines 36-55) and channel spacing of 10 GHz (col. 6, lines 54-55). Therefore, as it is suggested by Fee and as it is taught by Auracher, it would have been obvious to an artisan at the time of

invention to incorporate a signal transmission system and method such as the one of Auracher for the optical signal transmission system of Fee modified by Berger to provide a plurality of closely spaced channels to further increase the transmission capacity of the system.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fee et al. (US Patent No: 6,650,842 B1) in view of Berger et al. (US Patent No: 6,021,245) in further view of Kai (US Patent No: 6,154,588).

Regarding claim 10, the modified optical dispersion compensation system of Fee and Berger differs from the claimed invention in that Fee and Berger do not specifically disclose the DCM is a fiber Bragg grating. However, incorporating fiber Bragg grating for dispersion compensation is well known in the art. For example, Kai discloses dispersion compensation fiber Bragg grating (col. 5, lines 45-64). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate dispersion compensation fiber Bragg grating, as it is taught by Kai, for the dispersion compensation modules of Fee to provide a dispersion compensating fiber that has a flat loss characteristic over the operating wavelength range and to provide compensation for a longer distance.

6. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fee et al. (US Patent No: 6,650,842 B1) in view of Berger et al. (US Patent No: 6,021,245) in further view of Ford et al. (US Patent No: 6,392,769 B1).

Regarding claims 11 and 13, the modified optical dispersion compensation system of Fee and Berger differs from the claimed invention in that Fee and Berger do not specifically

Art Unit: 2613

disclose at least one span contains a channel add-drop node. Adding an add/drop node along the lines in the communication systems is well known. For example, Ford discloses an optical span (104a, fig. 1) with an add/drop node (104, fig. 1). As it is taught by Ford, it would have been obvious to a person of ordinary skill in the art to incorporate an add/drop node along the optical span of Fee modified by Berger to further add and drop different channels.

7. Applicant's arguments with respect to claims 1, 13 and 14 have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (571) 272-3034. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

Application/Control Number: 10/692,782

Page 7

Art Unit: 2613

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
M. R. SEDIGHIAN  
PRIMARY EXAMINER